



## Mixing Ag Chemicals and MetaGrow™ Microbe Products

### MetaGrow Microbes are Durable

Microbes in stasis (all MetaGrow products) are protected from high temperatures (up to 120° F), freezing, high osmotic pressures, extreme pH, caustic materials, and chemical toxicities. Actively respiring microbe products (those with short shelf life or that require refrigeration) do not have protective coatings and suffer high mortality if mixed with synthetic fertilizers. MetaGrow microbe products can be mixed with most ag chemicals while in stasis.

### Microbes in Stasis Wake Up

When food and habitat conditions are suitable, microbes in stasis wake up very quickly. If mixing microbes with microbe food or organic fertilizers, the mixture must be applied within 24 hours (preferably within 8 hours) as the microbes will wake up with exposure to food.

Do not feed microbes in stasis before chemical mixing as the food wakes up the microbes making them vulnerable to the chemicals. Microbial food (e.g. **MetaGrow MFOOD**, **MetaGrow CFOOD** or other organic inputs) can be added to a tank mix with MetaGrow microbes and compatible ag chemicals if the mixture is applied within 8 hours.

### Synthetic Fertilizer Mixing

Synthetic fertilizers are typically not suitable habitat for microbes as they are too extreme pH, caustic, high osmotic pressure, toxic, etc. for the microbes; so they stay in their protective stasis. MetaGrow microbial products have 95-100% survival rates in synthetic fertilizer mixes and with storage durations over a year. Some successful fertilizer mixes tested at 50% concentrations include: **UN32**, **8-4-10**, **10-34-0** and **K Thiosulfate**. Actively respiring microbe products (those not in stasis) suffer 90-100% mortality if mixed with synthetic fertilizers.

### Jar Test Mixes First

Use the same mixing order and concentrations as the intended production mix. Let the mix sit in a sealed plastic bottle for 2 to 3 days at room temperature. If the plastic bottle becomes swollen from off-gassing and/or has a bad smell, then the test indicates the microbes woke up and are no longer stable. If the bottle is not swollen, do a further test to determine if the microbes are still viable. Dilute the mixture with water by 10:1, feed with **MFOOD** or fish hydrolysate, stir the mixture and leave the top open. In 24 hours evaluate the microbes under a microscope. If the microbes are active, the mix is successful. If the microbes are ruptured or inactive, they are incompatible.

### Fungicides and Pesticides

Most foliar applied fungicides and pesticides (not systemic ones) have only minor effects on soil microbes. Do not tank mix more than 24 hours prior to application (preferably less than 8 hours). See the list below for product compatibilities for tank mixing.



## MetaGrow Microbial Tank-Mix Compatibility page 1

Common Name	Trade Name	Compatibility
Azoxystrobin	Heritage, Quadris	OK
Banrot	Banrot	Avoid Combination
Benodamil	Bayleton	Avoid Combination
Benomyl	Benlate	Avoid Combination
Boscalid, 3-pyridinecarboxamide, 2-chloro-N- (4'-chloro (1,1'biphenyl) -2-yl)	Endura	OK
Captan	Captan, Orthocide	Avoid Combination
Carboxin + thiram	Vitavax	OK
Chloroneb	Terraneb SP, Terremec SP+B14	Avoid Combination
Chlorothalonil	Bravo Plus, Chloroflo, Chlortosip, Chloronil, Daconil 2787, Daconil Ultrex, Strike	OK
Chromobacterium subtsugae	Grandevo	OK
Copper Hydroxide	Kocide	OK
Cydia pomonella granulovirus	CYD-X HP	OK
Cyproconazole	Sentinel	OK
Difenoconazole + Metalaxyl	Dividend	OK
Dithiocarbamates	Ferbam	Avoid Combination
Ethylenebisdithiocarbamate ion (EBDC) (C4H6N2S4)	Powerline MZ	OK
Etridiazole	Koban	Avoid Combination
Fenaminosulf	Lesan	Avoid Combination
Fenarimol	Rubigan	OK
Fenpropathrin	Danitol	OK
Fludioxonil, 70 - N-[3-(1-methylethoxy) phenyl]-2-(trifluoromethyl) benzamide	Maxim 4F, Maxim MZ	OK
Folpet	Phaltan, Cleary's 3336, Fungo, Systec 1998, Senator WSB	Avoid Combination
Fosetyl-AL	Alliette, Prodigy, Alliette Signature	OK
Hymexazol	Tachigaren	OK
Imazalil	Freshgard, Fungaflor, Nuzone	Avoid Combination
Iprodione	Rovral, Chipco 26019	OK for bacteria, not for Myco



## MetaGrow Microbial Tank-Mix Compatibility page 2

Common Name	Trade Name	Compatibility
Mancozeb (EBDC)	Manzate, Manzate flowable, Fore, Nubark MZ, Ridomil, Tops MZ, Tops MZ GAUCHO	Avoid Combination
Maneb (EBDC)	Maneb, Mancozeb	Avoid Combination
Metalaxyl-Ridomil	Apron / Subdue Maxx	OK
Myclobutanil	Eagle, Rally, Systhane	OK
Olpisan	Olpisan	Avoid Combination
Oxyquinoleine	Carbostyрил	Avoid Combination
Pentachloronitrobenzene	Blocker	Avoid Combination
Propamocarb	Banol, Previcur, Proplant	OK
Propiconazole	Stratego, Banner MAXX	Avoid Combination
Pyraclostrobin	Headline	OK
Pyrethroid	Lambdastar, Delegate	Avoid Combination
Quintozene	PCNB Terrachlor, Turfcide	Avoid Combination
Spinosad	Entrust	OK
Tebuconazole	Folicur®, Folicur 3.6	Avoid Combination
Tebuconazole + Metalaxyl	Raxil xt	Avoid Combination
Tebuconazole + Thiram	Raxil Thiram	Avoid Combination
Thiazole	Benomyl, Benlate, Tersan 1991	Avoid Combination
Thiram	Thiram, Tersan 75	Avoid Combination
Triadimefon	Bayleton	Avoid Combination
Triflumizole		Avoid Combination
Zinc ethelene bisdithiocarbamate	Dithane	OK
Zinc white	Zinc oxide	Avoid Combination
Ziram	Ziram	Avoid Combination

If you have questions regarding other chemical compatibilities call SGS and we can figure it out.